

MINNEAPOLIS HARBOR, MINN.

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LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORTS ON PRELIMINARY EXAMINATION AND SURVEY OF MINNEAPOLIS HARBOR, MINN., WITH A VIEW TO INCREASED HARBOR FACILITIES, INCLUDING A TURNING BASIN.

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JANUARY 23, 1915.—Referred to the Committee on Rivers and Harbors and ordered to be printed, with illustrations.

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WAR DEPARTMENT,  
*Washington, January 21, 1915.*

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, dated 20th instant, together with copies of reports from Lieut. Col. Chas. L. Potter, Corps of Engineers, dated January 29 and December 10, 1914, with maps, on preliminary examination and survey, respectively, of Minneapolis Harbor, Minn., made in compliance with the provisions of the river and harbor act approved March 4, 1913.

Very respectfully,

LINDLEY M. GARRISON,  
*Secretary of War.*

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WAR DEPARTMENT,  
OFFICE OF THE CHIEF OF ENGINEERS,  
*Washington, January 20, 1915.*

From: The Chief of Engineers, United States Army.

To: The Secretary of War.

Subject: Preliminary examination and survey of Minneapolis Harbor, Minn.

1. There are submitted herewith, for transmission to Congress, reports dated January 29 and December 10, 1914, with maps, by



Lieut. Col. Charles L. Potter, Corps of Engineers, on preliminary examination and survey, respectively, of harbor of Minneapolis, Minn., with a view to increased harbor facilities, including a turning basin, authorized by the river and harbor act approved March 4, 1913.

2. The city of Minneapolis lies on both banks of the Mississippi River above and below the Falls of St. Anthony. That part of the river above the falls is not navigable. That part below the falls in this vicinity is not now generally navigable, but the completion of Lock and Dam No. 1, now under construction, will give a 6-foot depth on part of the Minneapolis water front, and that city will then become the head of the project for a channel of this depth on the Mississippi River above the mouth of the Missouri River. The city of Minneapolis is now engaged upon the construction of a water terminal with a view to utilizing the facilities to be provided. The district officer states that a small amount of dredging will be necessary adjacent to the water terminal to provide a suitable turning basin for vessels. He estimates the cost of a turning basin 6 feet deep at \$4,200, and expresses the opinion that the locality is worthy of improvement to the extent indicated. The division engineer concurs in this opinion, but believes that if the work is delayed until after the completion of the dam, the estimate should be increased to \$6,000.

3. These reports have been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, dated January 5, 1915, concurring with the district officer and division engineer regarding the advisability of the improvement, and with the division engineer regarding the amount of the estimate.

4. After due consideration of the above-mentioned reports, I concur in the views of the district officer, the division engineer, and the Board of Engineers for Rivers and Harbors, and therefore report that the improvement by the United States of harbor of Minneapolis, Minn., with a view to increased harbor facilities, including a turning basin, is deemed advisable to the extent of constructing a turning basin 6 feet deep, as proposed by the district officer, at an estimated cost of \$6,000. The full amount of the estimate should be provided in one appropriation.

DAN C. KINGMAN,  
*Chief of Engineers, United States Army.*

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#### REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS ON SURVEY.

[Third indorsement.]

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,  
*January 5, 1915.*

To the Chief of Engineers, United States Army.

1. The following is in review of the district officer's reports of preliminary examination and survey of Harbor of Minneapolis, Minn., with a view to increased harbor facilities, including a turning basin, authorized by the act of March 4, 1913.

2. At present navigation is impracticable on the Mississippi River in the immediate vicinity of Minneapolis, but the completion



of Lock and Dam No. 1, now under construction, will give a 6-foot depth on the Minneapolis water front, and that city will become the head of the 6-foot project for the improvement of the Mississippi River.

3. The city of Minneapolis is now engaged upon the construction of a water terminal at considerable expense, with a view to the actual use of the river for navigation, and in connection with this project plans are under way for the establishment of a barge line. It is estimated by local interests that about 380,000 tons of outgoing commerce will develop. The district officer states that if this is realized a return commerce of about the same amount may be expected.

4. A small amount of dredging adjacent to the water terminal is considered necessary to provide a suitable turning basin for the prospective river craft, and it is desired that the United States shall do this work. The district officer estimates the cost of a turning basin 6 feet deep at \$4,200, and he believes the locality worthy of improvement to that extent. No estimate for maintenance is given. The division engineer concurs in regard to the worthiness of the proposed improvement, but believes that if the work is not done before the completion of Dam No. 1, the cost may be increased to \$6,000.

5. In view of the large expenditures being made by the city of Minneapolis in the development of a water terminal, and the prospect of a line of barges being placed on the Mississippi River in an attempt to revive navigation, it is believed that the United States would be justified in cooperating in this work to the extent of providing the required turning basin. The board therefore reports that, in its opinion, it is advisable to undertake the work outlined herein at a cost of \$6,000, as estimated by the division engineer. The full amount of the estimate should be made available in one appropriation.

6. In compliance with law, the board reports that except as contemplated by the above recommendations, there are no questions of terminal facilities, water power, or other subjects so related to the project proposed that they may be coordinated therewith to lessen the cost and compensate the Government for expenditures made in the interests of navigation.

For the board:

W. M. BLACK,  
Colonel, Corps of Engineers,  
Senior Member of the Board.

#### PRELIMINARY EXAMINATION OF MINNEAPOLIS HARBOR, MINN.

UNITED STATES ENGINEER OFFICE,  
St. Paul, Minn., January 29, 1914.

From: The District Engineer Officer.

To: The Chief of Engineers, United States Army  
(Through the Division Engineer).

Subject: Preliminary examination of Minneapolis Harbor, Minn.

1. The river and harbor act approved March 4, 1913, provided for the following preliminary examination: Harbor of Minneapolis,



Minn., with a view to increased harbor facilities, including a turning basin.

2. At the time the matter was referred to this office for report the city of Minneapolis had certain more or less indefinite plans for the construction and maintenance of terminals for river transportation. The report has been delayed until these plans should reach some definite shape and a better idea had of what was desired for a harbor.

3. The city has since obtained authority from the State legislature to issue \$350,000 in bonds for the purpose of constructing proper harbor terminals; \$50,000 have been issued and sold, or will be sold shortly; surveys are under way for a sea wall in front of their proposed terminals; and a good idea may now be had of the nature of their proposed work and the location of a portion of it, although the full extent of their development has not yet been decided upon.

4. The city of Minneapolis lies on both banks of the Mississippi River above and below the Falls of St. Anthony. That part of the river above the falls is not navigable. That part below the falls is not now generally navigable, but the completion of Lock and Dam No. 1 and the improvement of the channel between St. Paul and the lock, will make Minneapolis the head of the projected improvement of the Mississippi River above St. Louis. The city extends on the west bank down the river below the Falls of St. Anthony to and below Lock and Dam No. 1, which is six miles from the falls and on the east bank to the city limits of St. Paul, or about  $3\frac{1}{4}$  miles—both distances being measured along the harbor lines recently established throughout the Minneapolis front. The river below the falls runs between high and steep bluffs, with little lowland between bluffs. This limits possible terminals to a few points which combine available land in the bottom with accessibility from the bluffs. Within reasonable distance of the business portion of the city, there appear to be two such places available. One on the west bank (known as Bohemian Flats) extends from about 1,500 feet below the Washington Avenue Bridge to about 2,000 feet above that bridge (1,300 feet of it being also above the Northern Pacific Railway bridge). All these distances are measured along the harbor line. The other location is on the east bank, just below the lower falls and extending along the harbor line a distance of about 1,500 feet. This location is above both bridges.

5. Of that portion of the Bohemian Flat location which is below the Washington Avenue Bridge, the city now owns the greater part, it having been the public levee or landing for boats which formerly ran to Minneapolis during the higher stages of the river. The Washington Avenue Bridge has always been officially and unofficially known as the head of navigation. At that point there is a decided change in the bridges. Below the Washington Avenue Bridge, the lowest bridge is that at Franklin Avenue, which is 60 feet above high water as it will be backed up by the dam. All of these bridges have their piers well located for navigation. The Washington Avenue Bridge is only 44 feet above high water and the Northern Pacific only 38 feet above high water, and both also have piers located badly for channel or harbor purposes.

6. A public hearing was held in Minneapolis December 15, 1913, and the matter of the work the city proposed to do on the construction of terminals was carefully gone over, and figures were submitted



showing probable commerce which was expected to be carried by river as a result of the completion of Lock and Dam No. 1 and the construction of the proposed terminals.

7. The freight figures were collected from firms and corporations doing business in Minneapolis, and are claimed to be conservative. In fact, they are understood to be more than a mere estimate, and in most cases appear as a sort of a guaranteed amount of freight they will furnish to a barge company, now being organized in Minneapolis—guaranteed provided a certain freight rate, which the barge company claims it can offer, will result. Such figures total about 380,000 tons and are almost entirely outward shipments. One coal company estimates that 500,000 tons of coal will come from the Illinois coal fields to Minneapolis. On this subject it is believed that there is some question. Illinois coal has to be loaded onto cars and pay a rail rate in order to reach the Mississippi River. It must again be loaded onto cars at the Minneapolis water terminal to reach coal yards, consumers in carload lots, or consumers outside of Minneapolis. It is not believed that Illinois coal could afford to pay enough for the river haul, when railroad charges and terminal charges of both ends of such haul are subtracted from the present all-rail rate from the Illinois fields, to reimburse the barge company for a one-way traffic. It may be admitted, however, that if 380,000 tons of down-river traffic develop out of Minneapolis, there will be found an equal amount, in the other direction, of something, and in the absence of other freight, it may be assumed that coal will fill the vacancy. The barge company can afford to give a cheaper rate in order to get return cargoes than they could in a one-way traffic. The same condition applies on the Great Lakes, where the freight rate on coal is very low from the lower Lakes to Duluth. Iron ore is the dominant freight, and vessels are glad to bring back coal at a low figure rather than to come back empty. In the early days of our modern fortification work, imported cement was cheaper in San Francisco than in New York. The wheat-carrying sailing vessels from San Francisco to Europe brought back cement at a very low figure rather than to bring ballast for nothing. It may therefore be assumed that enough coal will come north by river to balance the freight and that therefore Minneapolis may handle 380,000 tons of return freight to offset an equal amount of outgoing freight by river, or a total of about 760,000 tons, assuming the correctness of the 380,000 tons outgoing.

8. The city engineer of Minneapolis is now figuring on building a sea wall throughout the entire length of the lowland on the west bank of the river below Washington Avenue Bridge and filling in behind the wall to make ground for terminals. The wall is to follow the harbor line, and they plan to extend it about 2,000 feet below the bridge. This will bring it into a region where the lowland is rather narrow, but, as considerable bluff material will have to be borrowed to fill behind the wall, it will probably be advisable to make terminal ground there rather than to encounter the disadvantages of going above the Washington Avenue Bridge. They are, however, still giving consideration to an extension above the bridge and some consideration to a possible terminal on the east side above both bridges.

9. Any extension above the Washington Avenue Bridge will be complicated by the height of the bridge, if the existing high-stacked



Mississippi River boat be used, and an extension above the Northern Pacific Railway bridge will be still more complicated by bridge height. Again, the location of the piers will be bad for any harbor terminals above them. Any great use of terminals above these bridges would probably have to result in the rebuilding of the bridges. The city authorities appreciate this and are also disposed not to overdo the terminal business until they find out what will result from a modest beginning. It is therefore probable that, for the present investigation, the Washington Avenue Bridge may be considered as the head of the work.

10. At the bridge and for about 600 feet below it the harbor lines are about 500 feet apart and that on the east bank is at the foot of the bluff. On the west bank there is quite a bar in front of the harbor line at the bridge, but this dwindles to nothing at about 500 feet below the bridge. In the bend the distance between harbor lines widens to about 600 feet and narrows again to about 500 feet at the lower end of the proposed terminal.

11. Considering the fact that going above the Washington Avenue Bridge for a turning basin, would bring in the bridge complications alluded to in paragraph 9, it would appear that the available turning basin for the terminals now proposed must be in the harbor itself and must include practically all the area between those lines, since 500 to 600 feet would be the minimum, and even that narrow a basin would not be justified except that the turning basin, harbor, and terminals must be all gotten into a space between the bluffs of only a maximum width of about 1,000 feet.

12. Since the greater part of the dredging necessary to furnish a turning basin must be done on the west side and along the sea wall which the city proposes to build, it at first appeared that the proposed work partook of the nature of providing terminal facilities and should not be undertaken by the General Government. The law specifically mentions a turning basin and to make such immediately below Washington Avenue Bridge, the river must be dredged so as to give the navigable depth from harbor line to harbor line. Had the bar been on the west bank, away from the sea wall, there would be no question of the Government's undertaking the work if navigation needs it. It therefore seems that the question of its being a terminal work is more apparent than real.

13. Any appropriation for work undertaken at this point should be made contingent on the city's building a sea wall for harbor terminals, and the extent of the sea wall should determine the extent of the work to be undertaken by the United States. The city seems to be determined to have a proper terminal—capable of expansion if business demands it—and its carrying out of its plan would appear in the nature of cooperation on its part, which should be encouraged. Another feature of cooperation on the city's part appears from the fact that the building of the sea wall and filling in behind it will make a tract not subject to overflow by the dam construction and will relieve the United States from the necessity of paying for flowage rights on that tract.

14. It is believed that the locality in question is worthy of improvement to the extent of having a survey made for the purpose of determining the cost and advisability of further work, and such a survey



is recommended. In the meantime, before final report, the city's plans will probably be in more definite shape.

15. No question of terminal facilities except as mentioned in paragraph 12, and no water-power questions except those at Lock and Dam No. 1 and the St. Anthony Falls Water Power Co., above, have any relation to the proposed improvement.

16. Map<sup>1</sup> of the locality is furnished herewith, and attention is invited to harbor-line maps.

CHAS. L. POTTER,  
*Lieut. Col., Corps of Engineers.*

[First indorsement.]

OFFICE DIVISION ENGINEER, WESTERN DIVISION,  
*St. Louis, Mo., February 10, 1914.*

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

Concurring in the opinion of the district engineer officer as expressed in paragraph 14 of the within report, and recommending that a survey be authorized to determine the cost and advisability of the improvement.

C. McD. TOWNSEND,  
*Colonel, Corps of Engineers.*

[Third indorsement.]

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,  
*February 24, 1914.*

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

For reasons stated herein, the board concurs with the district officer and the division engineer in recommending a survey in order to determine the extent and advisability of the improvement.

For the board:

FREDERIC V. ABBOT,  
*Colonel, Corps of Engineers,  
Senior Member Present.*

# SURVEY OF MINNEAPOLIS HARBOR, MINN.

UNITED STATES ENGINEER OFFICE,  
*St. Paul, Minn., December 10, 1914.*

From: The District Engineer,

To: The Chief of Engineers, United States Army  
(Through the Division Engineer).

Subject: Survey of Minneapolis Harbor, Minn.

1. Complying with instructions contained in letter of February 28, 1914, the following report on the survey of Minneapolis Harbor is submitted.

2. The field work was begun in September and completed in October. The result is shown in the accompanying map in two sheets; Sheet I being that portion of the river, available for harbor purposes, below Washington Avenue Bridge, and Sheet II being that portion of the river between Washington Avenue Bridge—the official head of navigation—and the Falls of St. Anthony.

<sup>1</sup> Not printed.



3. The survey brought out nothing new except an estimate of the cost. There has been little change, since former surveys, in that portion of the river available for harbor purposes.

4. The city of Minneapolis has gone on with its terminal work. This work has been limited to the heavy solid line shown on Sheet I. It consists of a concrete wall based on the sand rock at about 8 feet below low-water level as it will be after the dam at No. 1 is completed. About one-half of the wall has been completed from the downstream end; excavation for the remainder to Washington Avenue Bridge has been completed; and the bank has been paved for a short distance below the lower end of the concrete wall.

5. This is the future harbor of the city of Minneapolis—to be its harbor during the experimental stage of its attempt to revive navigation on the Mississippi River. It is the most accessible to the city of any of its front; it can be extended somewhat downstream with little cost except simple extension of the wall and excavation into the bluff for filling and to widen the terminal; and it can be much extended upstream, but combined with complications due to two bridges, unfitted for free navigation in the midst of the actual harbor, due to excessive dredging in the harbor, and due to strong currents resulting from the slope of the river from the foot of the Falls of St. Anthony to the head of the pool, particularly in low water, and if flashboards are not used on the dam. During navigation season the extreme low-water flow is not allowed, except under adverse reservoir conditions, to go below a certain point. At this minimum point of flow, it is estimated that the elevation of the water surface at Washington Avenue Bridge will be  $1\frac{1}{2}$  feet above the crest of the dam, without flashboards. With three feet of flashboards (the use of which is expected in low water) the level will be about 3 feet higher. Without flashboards the level will thus be 745 (Cairo datum) and there will be considerable fall and a decided current in the upper part of the available harbor of Minneapolis. With flashboards the elevation will be about 748 and the fall and current in the upper part of the harbor will largely disappear. Since no plan yet exists for the development of the power, the fixed dam must be considered and 745 (Cairo datum) must be accepted as the low-water navigation season, level at Washington Avenue Bridge. Extreme low water occurs in the winter season when navigation is closed.

6. The policy of Minneapolis to develop and use only that portion of its front which will give the best terminal for the least expenditure, and which will avoid the reconstruction of bridges, seems to be wise since no one can be absolutely certain whether it will be able to revive and retain a river commerce. These considerations practically require the city to develop exactly the locality chosen and on which they are now working.

7. The width between harbor lines, and practically that between the harbor wall and a vertical bluff, at Washington Avenue Bridge is 505 feet. The same width at the lower end of the harbor wall is 525 feet. A turning basin above Washington Avenue Bridge would be complicated by going through a bridge not adapted to navigation; into a naturally narrower part of the river; into a basin restricted in length by another bridge less fitted for navigation and 750 feet above; and into greater current than would exist below Washington Avenue Bridge. Below the proposed harbor there is no place for a



turning basin without excavating into relatively high ground, and a turning basin downstream from a harbor is not thoroughly satisfactory. The only practical policy is to choose a turning basin best adapted to the proposed harbor experiment, and that consists in dredging to the full width between harbor lines throughout practically the entire harbor length, thus making turning as easy as possible under existing conditions and allowing future developments to be worked out at another time.

8. Carrying out such a policy an estimate has been made for dredging up to the harbor wall throughout its entire length on the west side of the river; dredging practically to the harbor line on the east side of the river from Washington Avenue Bridge to section 17; and thence by straight line to about the east end of section 19—all to a depth of 6 feet below estimated low water in the navigation season, or to 739 Cairo datum.

9. As stated in the report on preliminary examination, this apparently would partake of the nature of terminal facilities, since it largely consists of moving material along a harbor wall and will give access to that wall by boats using the terminal for loading or unloading. But since there is practically no other place available for a turning basin for the proposed harbor, it would appear that the dredging may be done by the United States to make a turning basin and the fact that it incidentally gives access to the landing should not preclude its being so undertaken.

10. This might be considered a case where cooperation should be offered. The city is building a terminal at quite an expense; its use of the property as a public terminal will relieve the United States from the possibility of having to pay for flowage right over the terminal; a turning basin is provided for in the law; and its construction must give access to the terminal. It therefore appears that sufficient cooperation for so small an amount of work has already been made and that there is no bar to the undertaking of the work by the United States.

11. The total excavation outlined amounts to 12,000 cubic yards. A small amount will be sand rock in situ, and some of it will be large limestone slabs, which must be blasted. On account of these facts and on account of the small amount of work involved it is considered that an estimate of 35 cents per cubic yard to cover all superintendence, inspection, and contingencies would not be unreasonable. This makes the total estimate amount to \$4,200. If this could be made available during the next working season, much of the work could be done by scrapers at a cheaper rate than by dredge. The stones requiring blasting could be uncovered and blasted, and little but cleaning up would have to be done by dredge. This should make the work cheaper and make it ready for use when the pool is filled.

12. The appropriation or allotment should be made in one sum and should, if possible, be available in the spring of 1915.

13. As previously stated, there is now no commerce on which to base a recommendation, and the improvement must be based on speculation. It is believed that such speculation shows great possibilities and enough probabilities to warrant the proposed expenditure.



14. It is believed that the harbor of Minneapolis, Minn., with a view to increased harbor facilities, including turning basin, is worthy of improvement by the United States to the extent outlined herein.

CHAS. L. POTTER,  
*Lieut. Col., Corps of Engineers.*

[First indorsement.]

OFFICE DIVISION ENGINEER, WESTERN DIVISION,  
*St. Louis, Mo., December 18, 1914.*

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

Concurring in the recommendation of the district engineer officer, that the harbor of Minneapolis, Minn., is worthy of improvement by the United States to the extent herein outlined, but the division engineer is of the opinion that the estimate of \$4,200 is too low, unless the work is done before the completion of the dam. If the excavation is delayed until after the completion of the dam, it is believed that the estimate should be increased to \$6,000.

C. McD. TOWNSEND,  
*Colonel, Corps of Engineers.*

[For report of the Board of Engineers for Rivers and Harbors on survey, see p. 2.]







MINNEAPOLIS HARBOR  
MISSISSIPPI RIVER

PREPARED UNDER THE DIRECTION OF  
Lieut Col. Ches L. Potter,  
Corps of Engineers, U. S. Army  
Geo W. Freeman, Assistant Engineer  
Elevations are referred to Cairo Datum

SCALE OF FEET  
100 200 300 400

Surveyed and drawn by JWC Sep and Oct 1914  
Traced by H V Dec 1914  
Checked by GWF Dec 1914  
Submitted by GWF Dec 1914

U.S. Engineer Office,  
St Paul, Minn., Dec. 9, 1914

Approved *Chas L. Potter*

Lieut. Col. Corps of Engineers, U. S. A  
To accompany report of Dec. 10, 1914,  
to the Chief of Engineers

NOTES -

The elevations of the river bottom  
are expressed in feet above Cairo Datum  
W.S. = Water surface at time of sounding  
Low water with dam completed  
estimated to be 74.5 ft











